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THE PAST AND PRESENT DISTRIBUTION OF SOME OF THE RARER ANIMALS OF SCOTLAND.

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IV. THE BADGER.

ALTHOUGH still a common British quadruped, the Badger is not nearly so numerous or so widely distributed as formerly. Proofs of its former abundance are forthcoming from almost every county of Scotland; topography teems with places called after the "Brock." The following are only a few instances from many selected to illustrate its former distribution:—*Alt-nam-broc*, in Rosshire; *Carn-broc*, Ayrshire; *Eas-nam-broc* ("the Badger's Waterfall"), Invernesshire; *Strath-broc*, Linlithgowshire; *Monia-broc*, Stirlingshire; *Mona-broc*, Renfrewshire (the two latter meaning Badger's Hill); *Craig-nam-broc*, Argyleshire.

In nearly all of these counties many more instances might be given of the use of the name in topography; and in England also are many, as Brockley Hill in Middlesex, Brockhurst in Shropshire, and Brockworth in Gloucestershire. Many of these localities are still known as the haunts of Badgers at the present day, and have, in most cases, been frequented by Badgers from an extremely early date. They are also still far from uncommon in England, and recent reports have been received of their occurrence within a few miles of London. Thus, at Dollis Hill Farm, Willesden, as I am informed by Sir Dudley Marjoribanks (now Lord Tweedmouth), a Badger was dug out about five years

ago (say 1876), and many other notices might be gleaned from 'The Field,' 'The Zoologist,' and other periodicals. But the distribution of the Badger in Scotland is far from being general, many large tracts being unfrequented, and others well stocked. Protection has a good deal to do with this in certain localities, and persecution in others, apart from the amenity of the situations.

Owing to the trade in live Badgers, and the escape of individuals from confinement, some of the records may not be considered so reliable for the purpose of comparing the past and present distribution, as if they all related to truly wild animals; but it would be next to impossible to separate these two classes of records, and I have not attempted to do so in the present article. Proof of its former abundance also may be gathered from the fact that of old there was no specific name in Gaelic for a fox-hunter, but such a man was invariably known as a "Brocair," i. e., the Badger-man, or Badger-killer.

It is curious to find that no mention is made of the Badger, or Brock, in the 'Boke of St. Albans,' one of the oldest books in the English language,* nor do we find any notice of it in Maddox's 'History of the Exchequer,' or in Burke's 'Heraldic Illustrations'; but later, in heraldry, we find it in common use. Thus, in 'The List of the Baronetage,' the crest of the Brokes, and also of the Brookes of Colbroke, was a Badger.

One of my correspondents remarks, no doubt correctly, that 1842 was a sad year for the poor Badgers, owing to the revival of the Highland dress after the Queen's visit to Scotland.

The Badger occurs, or occurred, all over the mainland of Scotland, but does not appear to be indigenous to any of the islands, specimens which were caught in Jura about twenty-five years ago by Mr. Cox, gamekeeper at Culzean, Ayrshire, having in all probability been introduced. Badgers have also been introduced to the island of Ailsa Craig. Five were obtained from Peebleshire about six years ago, and were put upon the Craig by Mr. Cox, and the introduction has been successful, as young ones have been seen there since.

From the following notes, collected from various parts of Scotland, some idea may be formed of their past and present

* In 'The Boke of St. Albans' the Badger is referred to (f. iiij rev.) as "the Graye," a name by which it is frequently mentioned in mediæval Household Books.—Ed.

distribution, though the said notes do not profess to exhaust the subject. Commencing in the North of Scotland, and travelling southwards, the comparison between the notes under each county will, I believe, be made easiest:—

Caithness.—From this county I have no returns, as I have hitherto failed to obtain a regular correspondent in it.

Sutherland.—This county appears eminently suited to the habits and requirements of the species, especially in the more mountainous districts of the north and west, and of the east. They are preserved in the Duke of Sutherland's own Forest of Dunrobin, and they breed there every year. A male, caught in a trap in Balblair Wood in October, 1866, was at once liberated, but a sow, caught in a trap in 1870, was not so fortunate, but died before it could be released. Elsewhere, in the east of the county, they cannot be said to be plentiful. Mr. T. E. Buckley, indeed, who lived there for many years, and is intimately acquainted with the district, writes me that he never heard of the Badger in the district until 1879, when one was killed at Dunrobin: "but," he adds, "they used to be present on this ground, as there is a barn on Gordon Bush called *Alt-nam-broc*. In the Reay country it still exists in small numbers. Two were trapped about 1875 or 1876 on the march of the Reay forest, in a fox-trap baited with a hare.*

Rosshire.—In many parts of this county, where it was, not many years ago, abundant, it is now nearly or quite extinct. In the parish of Gairloch it is considered quite extinct by Mr. Osgood H. Mackenzie, who is intimately acquainted with the fauna of his district. He records the last killed twenty years ago (say 1860) at Inverewe. In May, 1879, distinct evidence of the presence of a Badger was seen by the forester in Fannich Forest, it having passed the winter in a den there. In the preceding spring a Badger was trapped in the neighbouring Forest of

* I may mention here that I have a great many returns of vermin killed in this county for many years back, from which I could cull many facts of the past and present distribution of this species; but I prefer to retain these notes for the present, or at least only occasionally to refer to them, as I think that the material will accumulate sufficiently to make a fuller paper upon "Past and Present Distribution of so-called Vermin," and will be more interesting in this form.

Braemore, a few miles from where the above evidence was seen. These are the only ones heard of or seen in the district for a very long time. In the east of the county it appears to be equally rare, as it is now more than twenty years since the last one was killed on Balnagown by a keeper of the name of Scott. A little further inland, in Strath Conan, it is reported as having been very common before game was preserved, but does not appear to have been common for the past twenty years (or say since 1860). The last killed was about eight years ago (say 1872). At Struy, also in the east of the county, it is reported as being almost extinct, and this extermination has taken place since 1874, between which date and the present eight have been trapped.

Invernesshire.—In this county it still holds its own fairly well, though not so abundant as formerly. In some places, where once common, it has become quite rare. The last Badger seen on Guisachan, in the east of the county, was trapped at Cogie, four miles from Guisachan House, in the winter of 1855, and none have since been seen or tracked in the snow, as I am informed by Lord Tweedmouth. Its former residence there is shown in the name of a waterfall close to Guisachan, called to this day *Eassan-nam-broc*. A little more inland, in Glen Urquhart and Glen Morrison, it still exists, though not very plentifully. "At the present moment," writes my informant, "there are two Badgers within two miles of where I write." This was in March, 1880. It is reported also as not yet extinct in the Glenmore district, south of the Spey. Further west, and north of the Caledonian Canal, it is still abundant about Fort Augustus. In Badenoch Badgers are counted rare, but are still present in Ardverikie or Ben Aulder Deer-forest. Two were got in 1880 also at Corrie, Invereshie, on the property of Sir George Macpherson Grant, Bart. Four were killed within three miles of Loch Errochd Lodge in 1878, and an informant told a correspondent of mine that two years ago he counted no less than thirteen Badgers sunning themselves in a choice spot not far from Ardverikie Lodge. They are carefully preserved here—as indeed are all the native wild animals—by the proprietor, Sir John Ramsden, Bart.

Nairn, Elgin.—A very marked cause of their decrease here is stated by the Brothers Steuart, in their 'Lays of the Deer

Forest,' where it is stated that many were killed at Tarnaway in the violent floods of 1827 ('Lays of the Deer Forest,' vol. ii., p. 268), so graphically described by Sir Thomas Dick Lauder ('Account of the Moray Floods'). It is now scarce, and indeed has been for a good many years- They still exist in Darnaway Woods, and seventeen years ago, at Dalry, they were numerous, and Mr. Grant, keeper there at that time, kept a lot of rough-haired terriers on purpose to hunt them. The last killed at Dalry was about four years ago (say 1876). In the Keith district the last killed was a sow, along with four young, which were trapped upon Keith Lodge shooting about thirteen years ago (say 1868). Speaking of Badgers at Dalry, Mr. Grant tells me of one Badger which became so tame that it followed one about like a dog, and use to go out with the shooting party regularly, and keep close at their heels like a terrier. It would not, however, take the water, and, when they crossed a certain burn, it used to run along the bank until it came to a foot-bridge, when it would cross and follow on their track like a dog. Captain Dunbar Brander recollects the Badger as very abundant in Elgin forty years ago. He has a distinct remembrance of no less than five earths within a radius of three miles of his house. These earths now are occupied only by rabbits, and the last Badger occurred there in 1854 or 1855, when in company of the late Mr. Charles St. John, author of 'The Highland Sports,' &c., he saw one dug out.

Aberdeenshire.—In the Don Valley the only Badgers in the district at present are strictly preserved by the proprietor. The locality is pretty far up the river, but it is not necessary to name it. In the Dee Valley they are not quite so scarce, but they are far from numerous. In Glen Tanar, Dee Valley, ten Badgers have been trapped or otherwise obtained between 1870 and 1880. It is reported as not yet quite extinct in the north-east of Aberdeenshire, being still found on one or two properties. On most of the lower reaches of the Dee it is probably verging on extinction, if not indeed already extinct. Long ago they were present at Crathes. Until six years ago, however (say 1874), Badgers were to be seen, and some were frequently killed in the woods of Hazelhead, about three miles west of Aberdeen. The last seen there, of which Mr. George Sim has any knowledge, were a male and female which had taken refuge in a waterlade,

and had been drowned when the water was let down upon them. At Park Hill, where they had a stronghold, they were killed out about ten years ago (say 1870). Park Hill is about six or seven miles north-west of Aberdeen. Mr. Sim says he is not aware now of any places in the county which can be said with certainty to hold Badgers, excepting one property, which he mentions by name. At this place they were extirpated about forty years ago, but have lately reappeared, and they are now carefully preserved, and looked upon as harmless by the proprietor. In the extreme north-east of the county, the Rev. W. Gregor got one twenty-four years ago (say 1856), and reports it as being now very rare in the district; it is indeed, I think, probably extinct. A few still, in 1880, exist about Braemar, however, and their tracks were seen in 1880—81 on the snow near Old Mar Lodge, and I have record of one killed in 1856 on the braes of Mar, but none since then.

Argyleshire.—In Sunart there are still a good many Badgers, but few fortunately are killed, as they go deep into carns of stones. One was killed on the top of Ben Resipol by terriers when hunting for foxes in April, 1876, and the keeper trapped another in May of the same year on the "rough side of Glentuire" in a trap set for Hooded Crows. It is somewhat curious that they seem to be quite unknown in the adjoining promontory of Ardnamurchan, west of Salen, which marches with Sunart. Mr. J. J. Dalgleish, who has known the place since 1856, has never known of Badgers there, nor have any been seen by the keeper since he came there in 1862. The tangled woods and rocky and almost unapproachable places overlooking Loch Sunart, however, might possibly harbour a few of these animals for a long time without much chance of their detection, especially of late years, since the woods have got up. The Rev. A. Stewart, of Ballachulish, seems to consider the Badger much rarer in Strontian Lochail and Lochaber. He can only instance very few having been killed during the last twenty years. Twenty years ago (say 1861) he saw a living female with two cubs, which had been captured previously about ten miles north of Fortwilliam. About twelve years ago (say 1870) he saw a very fine and savage old male in the possession of a shepherd at Strontian. It was afterwards sent south to a friend in Dumfriesshire. About five years ago (say 1877) a female was killed in Glen Etive. There is

also—or was—a stuffed specimen in Balachulish House. It was killed, Mr. Stewart was told, in Glen-a-Chaolis, about a mile and a half inland from the present hotel. I have few returns of consequence from other parts of Argyleshire, but they are still found in many parts of the county, and I know of one locality, not far from the Pass of Brander, where they have existed almost from time immemorial, and are still to be found every season. I shall be glad to receive further statistics from this county.

Kincardine.—Fifteen years ago at Benholm Castle, the keeper at that time there, killed ten Badgers the first season. After that he received instructions not to kill any more. They are reported as plentiful in the county up to 1847, when a litter was destroyed; and in 1865 one was shot, but was supposed to be a wanderer.

Forfarshire.—From this county I have scarcely any returns, and would be glad to receive some. At Gray House one was caught in 1849, as I am informed by Capt. H. W. Feilden.

Fifeshire.—Along the sea-coast, in the east of Fife, it was at one time abundant, but is much rarer now, as well as in the interior. They lingered in Kinglassie Wood until 1848, when two were trapped at Camber House. Kinglassie Wood has since been cut down, however, and, as far as I can learn, none have been seen there since. It was cut down in 1848—1849 (*vide* 'The Squirrel in Great Britain,' p. 140). A year or two ago one was caught on Bunarty Hill, which lies up towards the Cleish Hills, and is well wooded on the southern slope. It is forty-two years* (say 1838) since a Badger was killed in the district around Largo, as far as my informant, Mr. Charles Harvie, can learn. The sea-cliffs east of St. Andrew's were their breeding haunts fifty years ago, and it used to be the practice to "draw the Badger" in a hole on St. Andrew's Links. Of later years they have been known to occur in the west of the county, but their occurrence in the east is doubtful. At Markinch, however, one was obtained on the 14th of February, 1880; but it is many years since any were seen here before.—('Scotsman,' 10th February, 1880.)

Kinrosshire.—In this small county I have no record of any specimens obtained of late years, but should be glad of data, if any such are forthcoming.

Perthshire.—This county still holds a prominent place in Scotland, notwithstanding the extent to which game-preserving is carried, as sheltering many of our rarer and most interesting animals, and the information obtainable is considerable as regards the Badger, amongst others. In the north of the county they were very abundant about 1842, and for a few years afterwards along Loch Erroch side, and also in Rannoch, but they are rare or almost extinct there now—some correspondents say “extinct.” In the Upper Tay district and Breadalbane, however, they are still not uncommon, having been seen at Killiechassie and on the Cluny Rocks as late as 1880, and one having been killed in 1874. It is believed that they are still common in this locality, which is well adapted to their habits. In Remony and Breadalbane, further west, however, they appear to be scarce, and in one part of the district Mr. Dewar claims to have killed the last one seen, in 1844, a little west from Kinmore on the south side of Loch Tay; but on Mornish Hill, and above Finlarig, Mr. Dewar killed eight during the last ten years. In 1871 he got the mother and two cubs. At Chesthill, Glenlyon, two were killed during seven years since 1872, and they are not yet extinct there; while, about Glenhochy and Killin, four were killed in 1879. At Glen Queich, south of Loch Tay, near Easter Shian, it is probably extinct, and the last killed was about 1860, on the borders of Amulree and Easter Shian Moors. In the east of the county, between 1870 and 1880, five were obtained, but Mr. Paterson, of Dalnaglar, thinks they must have come long distances, and were not really daily inhabitants of the glen. A few still exist about Dunkeld, but it is thought will soon be extinct unless preserved. In the Carse of Gowrie and the Sidlaw Hills, Colonel Drummond Hay remembers them as very abundant about 1820—24, but they have been extinct now for many years. At Dupplin several have been killed of late years. From all the Valleys of the Earn and Allan west of this, I can hear of none obtained in late years. In the west of the county Mr. Macpherson killed one on Ben More, and they are still not extinct on the Braes of Balwhidder, where one was got in 1879, and another the same year at Glenbucket. Nor are they extinct around Callendar. One was killed at Blairgany three years ago (1877), and now, if any remain, they are preserved. They were once abundant at the head of Edinchip Glen amongst the great

loose carns, and in Glen Ogle above Loch Earn, but it is doubtful if they now exist there. It thus appears that the Badger has become rarer or extinct in the north and a great part of the south of the county; also in the south-east and east, but retains a hold in the west and central portions. Again, in the south-east, one was caught about seventeen or twenty years ago (say 1860—63) by a poacher named Frank Morgan, along with two others, Peter Allison and John Pryde (all still alive), who caught the said Badger in a common Hare-net at a gate. It was kept alive, but again escaped. This happened on the Estate of Cromlix.

Dumbartonshire.—In 1873 Mr. John Colquhoun, in his 'Ferae Naturæ of the British Isles,' wrote, "Each rocky carn capping the Glenfalloch range of the Grampians has its family of Badgers." How far this is true at present I cannot exactly say, but I do not think they are now so generally abundant. In Arrochar, however, they are still very plentiful, and are unmolested. There are many colonies between Arrochar and Luss, and on the hills of Glenfalloch; the whole ground being rooted up by them, as I am informed by Mr. Colquhoun. He adds, "There have been Badgers in Glenfinlas from time immemorial, though in all probability they will in time be rooted out."

(To be continued.)

NOTES AND OBSERVATIONS ON BRITISH STALK-EYED CRUSTACEA.

BY JOHN T. CARRINGTON, F.L.S., AND EDWARD LOVETT.

(Continued from vol. v., p. 461.)

Pilumnus hirtellus, Leach.

Being the only British representative of this genus, it will not be necessary to consider separately the generic features of this species. It is somewhat diminutive in size, scarcely attaining, and rarely exceeding, an inch in breadth of carapace. The latter is of very compact form, rather convex, and covered on the anterior portion with closely-set hairs. The anterior margin is denticulated and the lateral margins are straight, narrowing towards the

posterior margin, which is also nearly straight. The abdominal segments are seven in number in both sexes, those of the male tapering off after the third segment, whilst those of the female are, as usual, much broader on account of the protection required for the ova.

The external antennæ are long, and the third joint longer than the second; the internal antennæ are club-shaped. The anterior pair of legs are very powerful in comparison with the size of the animal, thick and somewhat cylindrical in form. Perhaps the most remarkable feature in connection with them is, that one anterior claw is almost always nearly twice the size of the other, and that this disparity is not constant, for in some cases the right and in others the left claw is the larger. This does not appear to be the result of difference in sex, or locality, but is apparently a chance phenomenon. The remaining pairs of legs are rather plano-convex in form, the convex surface, of course, being the upper one. They are very hairy.

The colour of this species is usually of a warm reddish brown, with paler speckled markings. The forceps are pale brown. Like many others, the colour of this crab seems to be modified in some degree by the locality inhabited by the animal. Some specimens that we obtained from Weymouth were all of the tint referred to by Bell as occasionally occurring; whilst others that we obtained from the Sussex coast were reddish brown, and in some instances very pale. Here we have two different localities, not only geologically, but in the development of their marine flora, and hence possibly the variation in this, as in many other species.

Pilumnus hirtellus is with ova during the summer months. The eggs are yellowish when first exuded, becoming darker in colour as they mature; they are exuded in the early summer months in warm localities, but later in less favourable places. Bell mentions that he only found one female, and that dead and mutilated, among twenty or thirty specimens. We have, however, obtained a number of specimens of this sex from various localities.

This crab, though well distributed, is evidently a frequenter of warm areas; not only is it found on our southern and western coasts, but it is a fact to be noticed that the finest specimens we have ever seen were from the Channel Islands and the Devonshire and Dorsetshire coasts.

Other species of this genus seem to be widely distributed, and are recorded from such localities as the Mediterranean, Red Sea, Australia, east and west coasts of East Indies, and South America.

As regards the British Isles, we have obtained *Pilumnus hirtellus* from many localities of the south-western coasts, as well as from the Channel Islands. Bell states that it appears from Mr. Thompson's catalogue to be widely distributed on the coasts of Ireland, but in small numbers. It is, however, elsewhere recorded as common near Galway, and was washed up near Dublin after severe gales. It is frequent at Plymouth. Prof. Stalio gives it as occurring in the Adriatic Sea.

Pirimela denticulata (Leach).

The carapace of this rare species is roughly circular, being nearly as long as it is broad; the anterior margin is much denticulated, and the lower lateral margins converge towards the posterior margin; the upper surface is decidedly convex, the regions being well marked. The anterior pair of legs are equal in size, carinated, and the fingers grooved and serrated on the inner margins; the remaining legs are somewhat flattened and slightly fringed with hair on the edges. The abdomen is seven-jointed in the female and five-jointed in the male.

In size this beautiful little crab rarely exceeds an inch in diameter of the carapace. Its colour varies somewhat, being usually of a brownish tint, with occasionally a tinge of green.

It is evidently one of our rarest species. Bell records a few isolated cases of its capture on the coast near Sandwich, Bantham, Torquay, and Compton, Isle of Wight, as well as from Scotland and the Antrim coast. It has been recorded from St. Andrews (rare), Galway (rare), Belfast, and South Devon. Mr. Norman has obtained it at Guernsey and Herm in the pools accessible at extreme low tide, where it had probably gone for exuviation. In Cornwall it is sometimes found amongst trawlers' refuse. We have received specimens from the Channel Isles, Sussex coast, and Brixham.

In the 'Natural History Review' (vol. iv. p. 156) Dr. Kinahan gives an interesting account, with plate, of the zoëa form of this rare crustacean.

Carcinus mænas, Leach.

Again we have an instance of a genus represented by a single species, which is the commonest British crab. It is popularly known as "The Shore Crab," which is so commonly met with in our sea-side rambles. Although so extremely plentiful, it is not, on account of its small size, much used as an article of food, except in some districts by the poorer classes, although its flavour is decidedly sweet and pleasant. It is not unusual, however, to see barrows laden with this species hawked by costermongers at the east end of London.

The carapace of *Carcinus mænas* is slightly convex, regularly denticulated on the anterior margin, which is an even curve. The lateral margins converge towards the posterior margin at an angle of about 45° . The posterior margin is quite straight, with an elevated waved margin, when viewed vertically. The anterior pair of feet are of moderate size, the wrist toothed and the pincers denticulated.

The chelæ are of great service to the owner, for no other crab has such pugilistic and predatory habits as *Carcinus mænas*. If driven to defend itself, it will fiercely attack with these by no means insignificant weapons. If, however, it can burrow in the sand or mud of the shore it will do so, leaving its eyes, antennæ, and anterior legs uncovered. In this position few of its enemies will dare to attack it. The remaining legs are somewhat simple and smooth, the fifth pair having a few hairs on their lower margin.

The abdominal somites are five in number in the male and seven in the female, the latter being, as usual, broad and adapted to cover a large mass of ova.

In the case of this crustacean the ova are not of so brilliant a colour as are those of many other species, being of a dull yellowish brown tint. They are not fixed in such definite groups either, as many of those we have referred to, but are arranged in rows attached to a common centre, each ovum being attached to a main ligature by an equal-sized stem. This arrangement is dissimilar to the usual method on which the ova of the *Brachyura* are attached. The eggs are exuded at intervals extending over a long period. We have obtained the female with spawn from spring to autumn, but consider that this is due, to a great extent, to the more or less favourable conditions under which the animal exists.

The colour of this common but interesting species varies more than that of any other of the British Crustacea, and it is no doubt from the protection that is derived from its very close resemblance in this respect to its surroundings that it is of such wide distribution. On the sandy beaches of most of our shores this crab is invariably of a yellowish or reddish brown colour, the latter tint being more prominent in localities where the sand partakes of a ferruginous character. In estuaries or on shores of a clay or mud deposit, such as at the mouth of the Medway, the colour again becomes assimilated to the surroundings, the animal being of a dull brown, frequently tinged with green. In the rock-pools, however, of such highly favoured localities as the Channel Islands, where, in hollows in the syenitic or dioritic rocks, the *Zostera*, *Ulva*, and other richly tinted Algæ are in almost tropical profusion, there it is that the most beautiful colours of *Carcinus mænas* are developed. Instead of the sombre shades of the inhabitants of sandy or muddy shores we have here specimens marked with the brightest green mottled with white. So striking is the resemblance to its surroundings in these localities that it is at times almost impossible to detect the animal unless it moves.

Even in the tanks of the Westminster Aquarium, this adaptation of colour, as a means of protection, can be clearly observed. Specimens from different localities and of different shades have become of one hue after a short existence under such new conditions of life, those inhabiting tanks with a sandy bottom becoming unicolorous, whilst those in tanks with a shingly floor assume a mottled appearance.

The geographical distribution of *Carcinus mænas* is remarkable; not only is it extremely abundant on almost all parts of the coasts of the British Islands, but according to the 'Annals and Magazine of Natural History' (1874, vol. xiii. p. 405), quoting the 'Proceedings of the Asiatic Society of Bengal' (November, 1873), Dr. J. Anderson is stated to have taken it at Point de Galle. Besides this it has been recorded from the coasts of North and South America, as well as from the Arctic Ocean and the Mediterranean.

Carcinus mænas is of much service as well as of considerable annoyance to fishermen. It is crushed and used by them as bait for the whelk-pots. At Shoreham the children are often employed

catching them for this purpose, their apparatus being simply a piece of string with a fish's head tied at the end of it. A steady trade also exists in catching and sending away Shore Crabs from the Wash and Lincolnshire coast to the south-coast fishing towns, where they are used as just mentioned. Immediately after exuviation this crab is a tempting bait for some kinds of fish; in this soft state they are known as "peelarts." As an annoyance to fishermen, it not only walks off with the bait from ground-lines, but often when fishing from a boat the hooks upon being drawn up are found to be occupied by several of these crabs, to the exclusion of any fish.

On the Sussex coast the Shore Crab is called the "Jack Avell;" on the Norfolk coast, "Swinard;" and in Jersey, "Verte Crabbe."

Portumnus latipes (Pen.).

Although this remarkably interesting little crab is the only one of the genus yet known from the British seas, several others exist and have been described. M. Milne-Edwards places them in the genus *Platyonychus*. The two generic names seem to have given rise to some slight confusion, and we would refer our readers to Bell's explicit table of characteristics of the two genera.

The carapace of this species is usually about an inch long, and the same across the broadest part. The anterior margin is rounded, the orbits forming circular indentations in the curve; on each latero-anterior margin are three tooth-like notches, and between the orbits are three others, the centre one being the longest. The carapace is smooth and shining, of a dull whitish brown, with just a tinge of purple, and having a pitted appearance.

The chelæ are equal in size, the movable forcep much curved, the claws slightly ridged and fringed with short hairs. The remaining legs are also slightly fringed with hair. The antennæ are short. The eyes are somewhat prominent and fixed on stout peduncles.

We have had an opportunity of examining the ova of this species, which are very beautiful. We obtained specimens with spawn in the month of May. At that time the ova were of a beautiful straw-colour, and so clear as to be almost transparent when examined microscopically; they are, as usual, attached by

viscid ligatures, but in long strings instead of in bunches—in this respect resembling the foregoing species.

Portumnus latipes is by no means a common species, and, owing to its habit of burrowing, its exuviated shell is more frequently found than the living animal. We have obtained these casts from the Channel Islands, and when at Boulogne, in June of this year, we found a great number of them, very small in size, scattered over the broad reach of sand on the coast there. In May of this year we obtained about a score of living specimens, taken in one haul of a seine-net, at Shoreham. One female was with exuded ova, and others with ova not exuded. Carapaces only have been recorded from sandy ground at St. Andrews and Galway; at Dublin it has been washed up after gales; from South Devon, rare; and from other localities carapaces only are recorded, thus bearing out the idea that it is owing to its habits of life that it is apparently rare, and not often seen alive.

(To be continued.)

OCCASIONAL NOTES.

THE BEAVER IN SCANDINAVIA.—In continuation of my notes on the Beaver in Norway, which appeared in 'The Zoologist' last year, I have now to add that I cannot hear of so much as one individual of this species in Sweden, though I visited last autumn the two neighbourhoods in which I had had reason to suppose it likely that some few might still remain. I came down the whole length of the Torne River from Naimakka (passing on the way the late Mr. J. Wolley's collecting grounds), and could not learn that any Beaver had been heard of in the neighbourhood of that river for about thirty years, which is the most definite information I could obtain. I think this, however, leaves very little room to doubt that they are extinct thereabouts, for a Beaver is not an animal that hides its light under a bushel. The man (a Quan, or Finn), who gave me this information, knows the animal, for he used to see them up to about the time mentioned, but said that they used to be in the small streams, and never in the big river. I returned westwards, *via* the Stor Sjön, a locality I had had great hopes of, as the majority of people whom I have questioned on the subject in any part of Sweden referred me to Jemtland; and Lilljeborg mentions the Stor Sjön as being a possible locality. I was here again assured that it was years since any had been heard of thereabouts, and that they had existed most recently in the Fjeld districts, and not down in the lake.

I had a short-lived false alarm here, a gentleman telling me he had seen a Beaver-skin in Ostersund last winter. On pursuing my search to headquarters, I found that it was nothing more than one of the ordinary stock of American furs in a furrier's shop! Of course, merely travelling through a district is a very different thing from thoroughly searching it; but, though so many people outside Jemtland were confident that Beavers existed therein, yet no one in the province with whom I conversed held out the slightest hope of such a thing; and, though I am very far from being in a position to assert positively that no Beaver exists at the present time in Sweden (and should be very glad to find myself entirely wrong), yet I cannot help being now extremely doubtful about it. In Jemtland I was generally referred to a certain other province, which I hope to visit some day, but do not at all expect my wish to find Beavers there realised. Besides these localities, I naturally heard occasionally of some other locality where Beavers were supposed by my informant to exist; but further inquiries in each case satisfied me that such was no longer the case.—ALFRED HENEAGE COCKS (Great Marlow, Bucks).

UNCOMMON BAT NEAR DUBLIN.—On the 22nd June last, at half-past ten in the morning, I saw a large black Bat hawking for flies over the River Dodder, near Miltown Bridge. The sun was shining brightly at the time, and, as I watched it from the bridge, it frequently came quite close, sometimes above, sometimes beneath me. Its ears seemed short. From its dark colour I saw it was not the Noctule, which, from its size, I thought it might be when I first noticed it. It was in company with numbers of Swifts and Swallows. My friend Mr. More, of the Dublin Museum, who is familiar with the Serotine, agrees with me that it might perhaps have been that Bat, which, I believe, has not yet been noticed in Ireland.—PERCY E. FREKE (Rosemount, Dundrum, Dublin).

[The Serotine can hardly be described as black, or even dark-coloured. It is perhaps more likely to have been Leisler's Bat, which has already been noted in Ireland. See Zool. 1874, pp. 4071, 4236; and 1875, pp. 4419, 4532.—ED.]

ORNITHOLOGICAL NOTES FROM NORTHAMPTONSHIRE.—Mr. W. Tomalin, of Northampton, informed me by letter that he shot a Rough-legged Buzzard, *Buteo lagopus*, at Weston Favell, October 5th, 1881, and has recorded this occurrence in the 'Field' of October 15th. A Great Grey Shrike, *Lanius excubitor*, was shot by my friend Mr. George Hunt near Thorpe Waterville, November 1st, 1881, and sent to me in the flesh; this specimen is a female, and I think a young bird of the year. A Ruff, *Machetes pugnax*, was shot by my gamekeeper in a meadow near Pitchmarsh, November 2nd, 1881, and sent to me. I consider this fact worthy

of record, because the above is only the second instance of the occurrence of this species in our own immediate neighbourhood which has come to my knowledge, though the Ruff bred in the Cambridgeshire Fens, at not more than fifteen miles distance from Lilford, well within my recollection. I subjoin the dates of arrival of some autumnal migrants about Lilford, as observed by myself and Mr. G. Hunt above mentioned;—Redwing, *Turdus iliacus*, September 30th; Jack Snipe, *Gallinago gallinula*, October 10th (very unusually late); Grey Crow, *Corvus cornix*, October 11th; Wild Goose, *Anser* sp.?, October 15th; Teal, *Anas crecca*, October 19th (very late); Widgeon, *Mareca penelope*, October 28th; Fieldfare, *Turdus pilaris*, October 29th; Golden Plover, *Charadrius pluvialis*, October 29th; Woodcock, *Scolopax rusticula*, October 31st (about a week later than usual). We had but very few Snipes about our meadows on the Nen till the end of October, about which time a considerable flight dropped in, and upwards of one hundred, amongst which were a large proportion of "Jacks," were bagged by Mr. Hunt and the Lilford gamekeepers between November 1st and 10th. The annual arrival of travelling Wood Pigeons, *Columba palumbus*, took place about the end of October. Mr. Hunt, writing to me from Wadenhoe House, Oundle, November 1st, says:—"The Wood Pigeons have come; they are in flocks of hundreds and hundreds up round the woods, and will soon clear up all the acorns." A large number of these birds breed in our woods and plantations, but we always have an immigration of strangers in the autumn, their numbers apparently depending on the abundance or scarcity of acorns and beechmast, both of which were very plentiful in Northamptonshire last autumn.—LILFORD.

ORNITHOLOGICAL NOTES FROM DUBLIN.—We were visited by a terrible sou'-wester on Sunday, November 20th, which extended over the whole of Ireland, and during the week following specimens of Leach's Petrel were observed at the undermentioned places:—At McGilligan's Strand, Lough Foyle, seashore, one; Malahide, Co. Dublin, seashore, one; Clontarf, Dublin Bay, seashore, six; Edenderry, King's County, inland bog, one; Turbotstown, Co. Westmeath, inland lake, two; Ballinasloe, Co. Galway, thirty miles inland, one. At Turbotstown a pair were seen following a boat on the lake; a gentleman, who watched them, mistook them for little hawks. They flew along the margin of the lake for several hours against the wind to the upper part, then settling, drifted back again, keeping head to wind all the time. The stomachs on dissection contained the usual oily matter, and a number of round semi-transparent objects resembling the seeds of aquatic plants. The rusty, faded looking plumage of both, with the exception of the wings, was in an advanced state of moult, some of the tail-feathers being only half-developed, the new dark grey feathers making their appearance about the head and neck. Of those taken at Lough Foyle

and Malahide, there is no information as to whether they were alone or formed part of a small party. Six were seen at Clontarf estuary, Dublin Bay. The Great Northern Railway cuts across the mud-flats, forming a sheltered expanse about a quarter of a mile long and a few hundred yards wide. Up and down and round this place the Petrels kept flying in a zigzag course, following each other in single file, and reaching the margin of the tide for food. Outside an archway in the embankment, where the water rushes out at the fall of the tide, seemed to be a favourite place for them, and here, among the small waves, the little Petrels (looking like large black Swallows), hovered head to wind, and kept tipping the water with their tiny black feet. They were, however, well able to take care of themselves, keeping just out of gunshot, and it was with difficulty that one specimen (in an advanced state of moult) was obtained. The Petrel from Ballinasloe was picked up dead in a field about three miles from that town, and thirty miles from the west coast. As the telegraph wires run through the field, it may have been blown against them during the gale. The bird from Edenderry, King's County, far inland, was put up by a Snipe-shooter at the edge of a bog. On November 22nd, after the gale, I saw a specimen of the Pomatorhine Skua at Sutton, Bay of Dublin; it was chasing a Black-headed Gull when seen first, and was observed a few days later in the same place. On December 2nd I had a good opportunity of observing a flock of thirty or forty Snow Buntings; they were very tame, allowing me to walk up to them within five yards whilst feeding among the sand-hills. They were in various stages of plumage, the beautiful white-winged adult birds being mixed among the grey and dark brown plumaged birds of the year.—A. WILLIAMS (7, Grantham Street, Dublin).

THE PEREGRINES OF SALISBURY CATHEDRAL.—They are old friends of mine, and I believe they have inhabited the spire of our Cathedral from time immemorial. I have been here since 1861. The first time I think I noticed them must have been in 1864, and no doubt I ought to have done so before had my eyes been open; but never thinking of seeing such birds, they may have ere that escaped my notice. It was, then, in 1864, or possibly in 1865, that, being in the confines of the Close of Sarum, I was attracted by the piteous cry of a Peewit far above my head, and, on looking up, saw a Falcon and Plover both climbing the air as fast as they could go, the Peewit ringing in small circles, the Falcon making bold sweeps and mounting so quickly that she seemed almost to be walking upstairs; as soon as she ascended high enough, down she came at the Plover, but failed to strike it, the Plover descending in spiral curves like a corkscrew. After seeing this I kept my eyes open, and soon found that a pair of Peregrines roosted on the spire regularly every night. During that year I was constantly down in our water-meadows shooting, and I picked

up four different kinds of birds killed by them, *viz.*, Wood Pigeon, Moorhen, Partridge, and Wild Duck, the last so fresh that I took it home and dined off it; I might possibly have disturbed her. I used then to go up to the eight doors of the Cathedral (*i. e.*, where the spire springs from the tower, the tower being 207 feet and spire 193), and there I used to find various remains left by the Falcons, showing that it was a favourite resort of theirs. Amongst other things I picked up there was a Snipe's leg. On one occasion, when I was up at the eight doors, a fine Falcon (hen bird) settled on the fretwork just above my head, some sixty feet or more, and she did not seem to take the least notice of me. I could see every feather on her, and she was in good adult plumage. This must have been about 1867—1868, so it certainly was not the "Queen of Sheba" [a trained hawk that was lost and supposed to have taken up her quarters on the spire]. About 1864 or 1865, I one day noticed no less than four Peregrines, all soaring round the spire at the same time, one of which perched on the knob of the cross above the weathercock. This certainly looked like the old ones with their young, but unfortunately I cannot remember the date or time of year, though I feel sure it was in the late summer or early autumn. In 1866 the spire was restored, and, after returning from a six weeks' outing, I heard that one of the workmen had shot one of the "big hawks." I immediately inquired, and found the foreman had it, and valued it as a memento of his work at the Cathedral. I went to him, and, after seeing my birds, he let me have it for a consideration. It was villanously stuffed. I sent it up to Ward, of Vere Street, to be redone. Two days after I returned I was working in my garden in the Close, when I heard a noise, as I thought, of a plank thrown down on the roof of the Cathedral. But my man, who was with me, said "That's the other big hawk shot; I know the man was looking out for it." The next night but one the man brought it down to me. It was the Falcon, a fine adult female, evidently having previously been caught in a gin, her upper mandible being broken, and one toe of the left foot being wanting. He had taken it round the town to sell it, and at last, hearing that the foreman had given me the other, he brought it to me. He said there were two others there, and he would get them for me. These I saved, however, telling him I knew the Dean would not like it, and would send away any man who killed them. The Falcon was in the middle of the autumn moult, and therefore rather ragged in plumage; the Tiercel, killed about a month before, was in adult plumage, and had finished moulting. Since that date (1866) I have on and off always seen the Peregrines round the spire, especially in the winter, when they frequently roost there, our water-meadows affording them fine wintering grounds. About 1872 or 1873 I had a fine view of a pair flying about some fine elms in a park in front of the vicarage. I watched them for half an hour or so; at last the Tiercel flew off to the Clarendon Woods, and, giving a peculiar cry, the Falcon who

had stopped behind darted after him, and the rapidity of her flight when she went away in earnest was something marvellous, being out of sight, with a clear horizon, in a few seconds. In 1879 there was a great talk in Sarum about the Peregrines on the spire, the majority of people not having apparently noticed them much before; and they were said to be building there. This proved to be more or less correct, for the boy who rings the bell got up and took the eggs. As far as I could discover there was no nest, however, the eggs being laid in the gutter. There was quite a *furor* about it, and the boy was warned that if he ever disturbed them again, he would be dismissed on the spot. In 1880 it was reported that they were building there again. The eight doors, therefore, were locked, and no one was allowed to go up, for I asked myself; but the answer was that strict orders had been given by the Dean and Canons that no one was to go up there until the birds had flown. However, about a month or so afterwards one of the Canons, whom I know personally, went up to inspect, as he took an interest in such matters, and there he found two eggs laid in two different gutters, but no attempt at a nest made, the eggs having evidently been there for a month or more. These two eggs he has now himself, and will, I think, give them to the Museum. This year (1881) apparently no eggs have been deposited there. I was up at the eight doors about the middle of April, and found remains of pigeons, &c., but nothing else, and the Canon told me, on the last day of May, he had not seen or heard of the hawks for the last two months, whereas before that time he heard them regularly about eight o'clock in the morning, making a great noise, which was just as he entered his study, and when he always looked for them. The workmen, in 1866, used constantly to see them bring up various birds to devour there. It is quite possible that the "Queen of Sheba" may have paid the Temple a visit, hoping to find a Solomon who could answer the "hard question" where to build her nest in safety in these perilous days; but I think the subjoined account militates against her, or proves anyhow that we are independent of her.—A. P. MORRES (Britford Vicarage, Salisbury). [Communicated by Capt. F. H. Salvin.]

HABITS OF THE STORM PETREL IN CAPTIVITY.—I was much interested in the notice of the habits of the Storm Petrel which the Rev. Mr. Mathew quoted in 'The Zoologist' for December last (p. 489). However, I do not agree with the statement that these birds "never take the water like ducks," &c., and being forced into it "would perish as certainly as any land bird." During the years 1871-2 I had very many opportunities of observing this species, and have often observed it alight on and rise from the surface of the sea. I particularly remember one very calm day near the equator, when hardly a breath of wind was to be felt and the sea was as smooth as a mirror, that a great many Storm Petrels were noticed resting on the water. On lowering the gig and pulling towards them they swam

slowly from us, till, on getting too close, they rose one by one, only to settle down a little farther off. This was repeated several times with the same result. On the other hand, some Albatross, that were also near, seemed far more reluctant to rise, and did so only after great difficulty, striking the water for several yards with feet and wings before they got fairly "under weigh," and sometimes disgorging their finny prey to lighten them. It was only in calm weather, though, that I ever noticed the Petrels alight; at other times they were always on the wing.—J. M. CAMPBELL (Kelvingrove Park, Glasgow).

[It is not at all unlikely that the captive Storm Petrel referred to by Mr. Mathew was in ill health, and the oil-gland affected; hence the bird was unable to keep its plumage waterproof.—ED.]

FORK-TAILED PETREL.—Two specimens of this species were killed in November in the West of Scotland, one at Oban, the other a day or two after at Mearns, a village in Renfrewshire, a considerable distance from the sea, where it had been driven by one of the recent gales.—J. M. CAMPBELL (Kelvingrove Park, Glasgow).

EUROPEAN BIRDS OBSERVED IN NORTH AMERICA.—I shall be obliged by the insertion of the following corrections in my article on this subject, which appeared in 'The Zoologist' for September last:—Mr. Ridgway informs me that *Phylloscopus borealis* (Blas.) has been found breeding in the Yukon district, Alaska. *Parus cinctus* (Bodd.) breeds in northern Alaska; the eggs have been obtained lately from the Arctic coast at either Fort Rae or Fort Anderson. *Mareca penelope* (Linn.) breeds at the Aleutian Islands. This is in accordance with what I stated in the introduction, when I said, "Of those species which I have retained, some will, I believe, eventually be found breeding regularly in North America, and will be included in its fauna." Mr. Dresser also informs me that he has a specimen of an undoubted Iceland Falcon obtained from the Labrador missionaries.—PERCY E. FREKE (Dundrum, Dublin).

ERRATA.—P. 368, for *Larus marinus* read *L. minutus*. P. 376, for Brewer read Brewster, as the authority for the occurrence of the Ruff in Maine.—P. E. F.

SPOTTED CRAKE ON THE ISLAND OF FETLAR, SHETLAND.—I have lately received from Mr. Ritchie, of Unst (the northernmost of the Shetlands), a specimen of the Spotted Crake, *C. porzana*, shot by him on the adjacent island of Fetlar, on October 25th. This bird was killed among some long reeds growing upon the excellent snipe-ground with which the island is for a great part covered. Mr. Ritchie killed two Water Rails and a large bag of Snipe the same day. As Dr. Saxby makes no mention of the Spotted Crake in his 'Birds of Shetland,' this specimen, so far as I know, is the first recorded example from the islands.—C. CHAMBERS (High St., Edinburgh).

BUFFON'S SKUA AND LITTLE AUK IN CO. WATERFORD.—On the 14th October an immature specimen of Buffon's Skua was shot on the Comeraghs, at a distance of fifteen miles from the sea. It attracted the notice of the gentleman who shot it by swooping down like a hawk at some Golden Plover. On the 19th November a Little Auk was found alive in a ditch about seven miles from the sea. After its capture it was placed in a large tub of water, but has since died. It is an adult bird in beautiful plumage, and not very thin. A Storm Petrel and a Turtle were washed ashore at Tramore a few days ago.—J. C. BAKER (Newtown, Waterford).

OSPREY AND BUZZARD IN LINCOLNSHIRE.—Mr. Barber, taxidermist, of Lincoln, showed me an Osprey and a Honey Buzzard, both of which were recently shot in the neighbourhood of Lincoln. Two or three specimens of the Rough-legged Buzzard and one at least of the Common Buzzard were shot not far from here at the end of last year. Mr. Barber also showed me a white Jay, without a single normal marking, taken this year from a nest which also contained a pied specimen.—W. W. FOWLER (Lincoln).

GLOSSY IBIS IN LINCOLNSHIRE.—An immature specimen of this bird was shot at Skegness, Lincolnshire, on the 9th September, 1881. On dissection it proved to be a male.—J. CULLINGFORD (University Museum, Durham). [This is the specimen to which reference is made, Zool. 1881, p. 469.—ED.]

SPINOUS SHARK AT PENZANCE.—Two fishermen of St. Michael's Mount, fishing with hook and line within the headlands of the Bay in about fourteen fathoms water, caught a Spinous Shark on the morning of December 12th. Before I saw the fish it had been completely gutted and very much cut up, and buried in a pile of manure; but I had it dug up, and saw the remains of the head (the jaws had been cut out). All the back part of the belly and the dorsals and caudal fin were entire. The fish measured eight feet four inches over all, and I was told that it weighed three hundredweight, with which statement my judgment agrees. The head was very rough, with tubercles on it, but there were no spines. All over the back and two dorsals, and over the thicker part of the tail, there were the irregularly-placed sharp spines characteristic of the fish, but they were not so numerous nor so long as those which I had before seen, and I could find none on the part of the belly which I saw. I was particular in examining this, because I had been told beforehand that there were no spines on the belly. The tail was very large, and had both lobes fully developed. The stomach of the fish contained a rusty conger-hook, and nothing else. This is remarkable, inasmuch as in nearly, if not all, the recorded specimens, of which the stomachs have been examined, the same emptiness has been observed. It is probable that the fish may have been near the ground on which it was

caught for ten days or a fortnight, because our fishermen of Penzance have noticed during that period an unusual scarcity of fish there. And, assuming this to be so, it may point to some power on the part of the fish of ejecting the contents of its stomach under the terror of capture. So far as I could judge of the fish in its damaged condition, it was a flabby Ground Shark, not a Sarimmo.—THOMAS CORNISH (Penzance).

THE DORSE, OR GOLDEN COD, ON THE BANFFSHIRE COAST.—A fine specimen of the Dorse, *Gadus callarius*, was taken in the Bay of Cullen, a small town on the Banffshire coast, on December 3rd. Examples have been met with both in England and Ireland, but though a northern species I am not aware of its being met with before in Scotland. As it is a rare visitor to Britain, and apparently but little known, perhaps a brief account of the specimen in question may be worth recording. The description is as follows:—Length nearly 2 feet; circumference across the middle of first dorsal fin, $12\frac{1}{2}$ inches; length of head, $4\frac{3}{4}$ inches; fin rays—first dorsal 19, second and third rays the longest; second dorsal 20, fourth, fifth and sixth the longest; third dorsal 21, seventh and eighth the longest; pectoral 18, third and fourth longest; ventral 7, third longest; first anal 21, seventh, eighth and ninth longest; second anal 20, fifth, sixth and seventh longest. The caudal, which was slightly forked, being injured, I could not make out the exact number there, but I think there were over forty. The colour of the fish above and descending slightly below the lateral lines, as also on the top of the head, was of a beautiful golden yellow; the sides were of a silvery hue, which extended to the belly and on to the cheeks. All the fins and tail were likewise tinged with a delicate golden hue. The sides and head had a few dark markings here and there; the whole, however, had a very glossy and metallic lustre. The head was of a very peculiar shape, the sides being literally perpendicular, whilst the crown from about an inch and a half from the mouth to beyond the eyes was perfectly flat. It then rose into a rather sharp ridge, which extended back to the first dorsal fin. The mouth appeared very small for the size of the fish, the gape being only about an inch and a quarter. The barbel was scarcely a quarter of an inch in length. Both jaws were armed with very minute teeth, a few on the vomer, but none on the tongue. The eye was very large, fully an inch and a half across. The lateral line in this case had two slight curves, one upwards above the end of the pectoral, the other downwards from near the end of the second to about the middle of the third dorsal, then straight to the tail. The upper jaw projects considerably beyond the lower. The head as a whole looks rather diminutive for the body of the fish; at least, so it appears to me. The stomach contained live crabs,—a Cleanser Crab and a minute Porcelain Crab,—thus showing that the fish had been feeding along shore.—THOMAS EDWARD (Banff).

THE DIGESTIVE ORGANS OF THE PILCHARD. — While visiting the S.W. coast of England during the past autumn, the food of the Pilchard, *Clupea pilchardus*, and the anatomy of its digestive canal, claimed my attention. The fishes upon which my investigations were first made come inshore of an evening in order to obtain food; so, after sundown, nets were shot between their feeding grounds and the deep sea to intercept their return. On opening one of these fishes one sees the three separate portions of the stomach; anteriorly the œsophageal going from the mouth to the sac-like second or cardiac division; while the pyloric part passes laterally from between the two first portions to the commencement of the small intestines, and appears solid to the touch. On slitting them up we see, on the inner surface of the œsophageal portion, several rows of large proventricular glands, behind which the mucous membrane is plicated into longitudinal or slightly oblique folds: these are interrupted opposite the opening into the pyloric portion, but reappear in the cardiac part. The walls of the pyloric portion are at least twice as thick as those at any other part of the stomach, while the mucous membrane is densely studded with round but small glandular prominences. In every instance, out of hundreds examined, this division of the stomach was distended by what may be likened to a sausage-shaped mass, consisting of an outer covering formed by secretion from the glandular mucous membrane, which was distended by the remains of Crustacea in their zœa-form, while similar food was likewise present in the cardiac portion of the stomach, but not enveloped by any unorganised membrane. Having subsequently received some more examples which were not so distended with food, still this remarkable membrane, hitherto, as I believe, unnoticed among fish, was found. Weber, in 1829, pointed out that the air-bladder of the Herring possessed a posterior opening into the progenital canal, which I likewise found to be the case in the Pilchard and in the common Sprat.—FRANCIS DAY (Cheltenham).

RARE STAR-FISHES ON THE COAST OF ABERDEEN.—On the 10th of May last one of my fisher friends brought me a fine specimen of *Strichaster rosea*; and in June a specimen of *Astronyx loveni* was brought to land by one of our "great line" fishers. As both the above were new to me—the former described by Forbes as "*Cribella rosea*," the other not known when he wrote—I took both to London, and, through the kindness of Professor Jeffery Bell, had them identified from specimens in the British Museum. *Astronyx loveni* was first described by Miller and Loschell in 1861, and the only British specimen known apart from mine was described by John A. Stewart of New College, Edinburgh. The dimensions of the one now referred to are as follows:—Longest ray, part of which is wanting, 18 in. long; second and third, also imperfect, 14 and 15 in. respectively; fourth, perfect, 15½ in. Of the fifth only 2½ in. remain. On the upper side of the

body two rosy, round, irregular-edged plates run from the base of each of the rays, and nearly meet in the centre of the disk, the spaces between being of a soft leathery-like substance, and of a dark brownish colour; rays and dorsal plates white.—GEORGE SIM (Aberdeen).

MORPHOLOGY OF THE TEMNOPLEURIDÆ.—The following is an abstract of a communication by Prof. P. M. Duncan, read before the Linnean Society, December 15th, 1881:—The *Temnopleuridæ*, a subfamily of Oligopores, are remarkable for their sutural grooves and depressions at the angles of the plates. The author examined the grooves and depressions, or pits, in *Salmacis sulcata*, Agass., and found that these last are continued into the test as flask-shaped cavities, sometimes continuous at their bases, which are close to the inside of the test, but do not perforate. This is the case in the median vertical sutures of the interradium and ambulacrum. Between the interradium and the poriferous plates of the ambulacra are numerous pits in vertical series, which are the ends of cylinders closed and often curved within. Altogether the undermining is considerable. The grooves over the sutural margins are losses to the thickness of the test. The edges of the contiguous plates are sutured together by a multitude of knobs and sockets one-eighth of an inch in diameter, visible with a hand lens. In the vertical sutures there is an alternate development of knobs and sockets on each plate, corresponding to a similar development on the opposed plates, and these structures lining the pits. Between the horizontal plate-edges are sutures remarkable in their distinctness and position. The apical edges of the interradial plates have multitudes of sockets, and the actinal edges have, correspondingly, knobs; whilst the apical edges of the ambulacral plates have knobs, and the actinal ones have sockets. The ambulacræ, on their interradial edge, have nothing but knobs, and the interradian plates corresponding sockets; so that a great series of knobs and sockets ("dowelling") prevails. *Temnopleurus torematicus*, Agass., gave similar results, modified by the great development of the grooves, and the young form was shown to differ from the adult, and to have rows of knobs and sockets and barely penetrating pores. The arrangement in *Salmacis bicolor* and *Amblypneustes ovum* was considered. The pits have an importance, for they increase the superficies of the derm, and near the peristome, as indicated by Lovén, they contain *Sphæridia*. The paucity of knowledge respecting the union of the plates of the Echinoidea was noticed, and the nature of the suturing of an *Echinus* and *Diadema* was explained, the first resembling part of that of a young *Temnopleurus*, but it was without knobs and sockets. The author concluded by separating the *Temnopleuridæ* into two divisions—those with pores, and those with grooves without pores. The last are the oldest in time, and resemble young modern forms, which subsequently develop pits. He reduced the number of genera considerably.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

November 3, 1881.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

In opening the session, the President regretted it to be his melancholy duty officially to announce the death of the Treasurer, Mr. Frederick Currey, who was held in universal esteem. Thereupon a resolution was proposed, which was sympathetically spoken to by the former President, Mr. George Bentham, and his former colleagues and Secretaries, Messrs. H. T. Stainton and Prof. St. G. Mivart, which resolution was carried unanimously.

The Rev. W. H. Jones and the Rev. W. Moyle Rogers were balloted for and elected Fellows of the Society.

Prof. T. Spencer Cobbold exhibited under the microscope about a hundred eggs of *Bilharzia hæmatobia*. They were taken from a gentleman who had just arrived from Egypt, and who was the victim of hæmaturia, induced by the parasites in question, and supposed to have been contracted during a hunting expedition. By adding water nearly all the eggs were hatched during the meeting, and the rare opportunity was thus afforded of witnessing the behaviour of the newly born ciliated animalcules.

Mr. R. M'Lachlan exhibited and made remarks on a parthenogenetically bred beetle (*Gastrophysa raphani*). The specimen had been the second reared by Dr. J. A. Osborne in Ireland. The egg which produced it was one of a batch of forty-two laid by a virgin female on June 14th, and was hatched on the 24th. Moults occurred on the 1st and 5th July, metamorphosis to pupa July 14th, and the imago appeared July 23rd.

A description of some new birds from the Solomon Islands and New Britain, by Mr. Edward P. Ramsay, of Sydney, was then read by the Secretary. The new species are:—*Ceyx sacerdotis*, *Pomara (Monarcha) ugiensis*, *Calornis feadensis*, *Carpophaga Finschii*, *Baza Gurneyi*, and *Astur pulchellus*.

December 1, 1881.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

The following gentlemen were balloted for and duly elected Fellows of the Society:—Capt. P. Greene, G. S. Jenman, W. Landau, E. G. Warnford Lock, Rev. J. P. A. Sturges, Lieut.-Col. C. Swinhoe, G. C. Walton, C. S. Wilkinson, G. S. V. Wills, and the Rev. George Wilsou.

Mr. J. Harris Stone exhibited specimens of the dried plant, and made remarks on *Lychnis viscaria* as a trap for ants. He pointed out that three or four glutinous, sticky rings are situate immediately underneath the nodes in the flowering stalks. Ants climbing are arrested and die in numbers at the sticky zones. In Norway he had observed 95 per cent. of the plants with dead ants thereon; and he submits (1) whether the zones are a protection to the flowers, (2) the ants noxious, or (3) their dead bodies serve as nutriment to the plant?

Dr. Cobbold exhibited diseased roots of *Stephanotus*, which he had received from Dr. Masters. They swarmed with myriads of nematode worms, and were also covered with minute Acari. He referred the worms to the genus *Leptodera*, and stated that thirty years back he discovered similar parasites on the shrivelled leaves of Gloxinias.

Prof. Owen read a paper "On the Homology of the Conario-hypophyseal Tract; or the so-called Pineal and Pituitary Glands." He propounds the view that it is the modified homologue of the mouth and gullet of Invertebrates; that the subœsophageal ganglia or ganglionic masses, or neural cords, constitute the centres whence are derived and caudally continued the homologues of the vertebrate spinal cord.

The President, Sir John Lubbock, then read a paper "On the Sense of Colour among the Lower Animals," containing an account of some experiments made on a species of *Daphnia*, a small fresh-water crustacean, in order to determine its power of distinguishing colour and the limit of its power of vision. If a beam of light is passed through a prism and thrown on a white surface, we get, as everyone knows, a spectrum consisting of the colours of the rainbow, beginning at one end with red and ending with violet. But though the red and the violet are the limit of our powers of vision, it is hardly necessary to say that the rays of light extend farther in both directions; that is, beyond the red at one end and the violet at the other. It is an interesting problem, then, whether the limits of vision of other animals are the same as ours, or whether they are able to perceive any of the rays which are invisible to us. M. Paul Bert, some years ago, made experiments with *Daphnias*, and came to the conclusion that their limits of vision are the same as ours. Nay, he even felt justified in extending their generalisation to all animals. Sir John Lubbock, however, has already shown that ants do possess the power of perceiving the ultra-violet rays. His present experiments were made on *Daphnias*. He pointed out that if his conclusions differed from those of M. Paul Bert, it was probably because—thanks to Prof. Dewar and the authorities of the Royal Institution—he was able to experiment with more perfect appliances. He considers that *Daphnias* have certainly the power of perceiving the ultra-violet rays considerably beyond the limit visible to our eyes. This fact opens up various physiological questions of much interest, as for instance,

whether these animals perceive a colour different from any of those known to us, and of which, indeed, we can form no idea.

Mr. M'Lachlan communicated a paper "On the Neuroptera of Madeira and the Canary Islands," prompted by the researches of the Rev. A. E. Eaton in November and December, 1880. The author gives a *resumé* of all that had been published on the subject, and a tabular statement of the species found in the islands, indicating those known also to exist in Europe. In all about fifty-three species had been noticed from the islands, of which nineteen are known inhabitants of the European Continent, and four African; thirty-seven species had been found in Madeira, thirty-one in the Canaries, sixteen being common to both. The paper concluded with a detailed account of the species, including descriptions of several new ones.

December 15, 1881.—GEORGE BUSK, F.R.S., Vice-President, in the chair.

Messrs. W. H. Coffin, E. Milner, and S. H. Parkes were balloted for and elected Fellows of the Society.

Prof T. S. Cobbold exhibited a large Guinea-worm (*Dracunculus*), taken from a pony, and forwarded by Vet.-Surg. Frederick Smith from Madras. Only one previous instance of the occurrence of this parasite in the horse has been mentioned, and its authenticity was doubted by Fedschenko and other helminthologists.

Prof. Duncan gave the gist of a paper "On the Morphology of the Test of the *Temnopleurida*," for a notice of which see p. 25.

A communication was read from Dr. Geo. Edw. Dobson "On the Digastric Muscle, its modifications and functions;" and part xi. of the "Mollusca of the 'Challenger' Expedition," by the Rev. R. Boog Watson, was read in abstract.—J. MURIE.

ZOOLOGICAL SOCIETY OF LONDON.

November 15, 1881.—Prof. W. H. FLOWER, F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the months of June, July, August, September and October, 1881, and called attention to certain interesting accessions which had been received during that period.

Prof. Newton exhibited a specimen of *Emberiza rustica*, recently shot on the coast of Yorkshire. [See 'Zoologist,' 1881, p. 465.]

The Rev. Canon Tristram exhibited and made remarks upon skins of a Darter and Pigmy Cormorant procured in June of this year on the Lake of Antioch.

Mr. Sclater exhibited a specimen of the Glossy Ibis, *Plegadis falcinellus*, belonging to Sir Henry Mildmay, Bart., which had been shot in Hampshire in September last. [See 'Zoologist,' 1881, p. 494.]

A communication was read from MM. L. Taczanowski and J. Stolzmann on the habits and various plumages of the rare Humming-bird, *Loddigesia mirabilis*.

Communications were read from M. L. Taczanowski on two nearly allied species of Humming-birds of the genus *Steganura* from Peru, and on a new species of *Mustela* from North-Eastern Peru, which he proposed to call *Mustela Stolzmanni*.

Mr. W. A. Forbes read notes on the structure of the palate in the Trogons (*Trogonidae*), and on the systematic position of *Eupetes macrocerus*.

A communication was read from Mr. E. P. Ramsay, containing an account of the true habitat of *Pycnoptilus floccosus*, Gould.

A communication was read from Mr. E. L. Layard, containing a note on the South African mollusk, *Caliaxis Layardi* of Angas.

A communication was read from Mr. Edgar A. Smith, containing notes on the shells of the genus *Chilina*, with a list of the known species.

Mr. Arthur G. Butler read a paper on some Butterflies from Japan, with which were incorporated notes and descriptions of new species by Montague Fenton.

Mr. H. J. Elwes read a paper on the Butterflies of Amoorland, Japan, and Northern China.

November 29, 1881.—Dr. A. GÜNTHER, F.R.S., Vice-President, in the chair.

A letter was read from Dr. A. Frenzel, announcing his success in breeding Parrots of the genus *Eclectus* in his aviary at Freiburg, in Saxony.

A communication was read from Dr. A. B. Meyer, containing the description of a new species of *Eclectus* received from Timorlaut Island, which he proposed to name *Eclectus Riedeli*.

Mr. R. Bowdler Sharpe read a note on the genera *Schaenicola* and *Catriscus*, and pointed out that these genera were identical, but that the South-African *S. apicalis* was specifically distinct from the Indian *S. platyura*.

Mr. G. A. Boulenger gave the description of a new species of *Anolis* from Yucatan, proposed to be called *Anolis Beckeri*.

Mr. W. A. Forbes gave an account of the observations he had made on the temperature of the Indian Python, *Python molurus*, during her incubation in the Gardens of the Society in June and July last. The result arrived at was that in the present case there was a difference on the whole average of 1°·4 Fahr. in favour of the female as compared with the

non-incubating male when the temperature was taken on the surface, and of more than double that amount when the temperature was taken between the folds of the body.

Dr. Gwyn Jeffreys read the fourth of his series of papers on the Mollusca procured during the Expeditions in H.M.S.S. 'Lightning' and 'Porcupine,' 1869 and 1870. This part concluded the *Conchifera* or Bivalves. Eighteen additional species, chiefly belonging to the genus *Neera*, which is peculiar to deep water, were described. The geographical, hydrographical, and geological distribution, as well as the synonymy of all the species named in the paper, were treated of.

A communication was read from Dr. G. Hartlaub, describing the birds collected in Socotra and Southern Arabia by Dr. E. Riebeck. Among the Socotran birds was an example of a new species of Finch of the genus *Rhynchostruthus*, which he proposed to call, after its discoverer, *R. Riebecki*.

December 13, 1881.—Prof. W. H. FLOWER, F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of November, and called attention to certain interesting accessions which had been received during that period.

Mr. Sclater exhibited and made remarks on two skins of a Rail from Macquarie Island, south of New Zealand, which had been sent to him by Sir George Grey, K.C.B.

Mr. H. Seebohm exhibited and made remarks on specimens of the Rusty Grackle, *Scolecophagus ferrugineus*, and Pallas's Great Grey Shrike, *Lanius major*, which had been shot near Cardiff, and were new to the British avifauna.

A communication was read from Mr. Clements R. Markham, containing an account of his researches into the former Whale Fishery of the Basque Provinces of Spain.

Messrs. J. J. Lister and J. J. Fletcher read a paper on the condition of the median portion of the vaginal apparatus in the *Macropodidæ*, in which they arrived at the following conclusions:—(1) In the *Macropodidæ* the median vaginal canal is closed in early life. (2) In the genera *Macropus*, *Halmaturus*, and *Petrogale* (and perhaps also *Dorcopsis* and *Deudrologus*) an opening is formed, leading directly from the median vaginal canal into the urogenital sinus, which opening most probably gives passage to the young. This opening may be formed early in life, as is usual in the genus *Halmaturus*, or not till young are about to be produced, as in *Macropus rufus*. (3) The evidence with regard to *Macropus major* is conflicting; in one case the median canal has been found open after parturition, and in two others closed. (4) In *Hyppiprymnus Gaimardi* (and probably in *H. murinus*) the median canal remains closed, and the young passes down the lateral

vaginal canals, which present a different structure from that found in other examples of the *Macrodidæ*.

A communication was read from the Rev. Canon Tristram, containing the description of a new Fruit Pigeon of the genus *Carpophaga*, from the Louisiade Archipelago, which he proposed to name *Carpophaga Salvadorii*.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

October 5, 1881.—H. T. STAINTON, Esq., F.R.S., &c., President, in the chair.

Mr. R. M'Lachlan exhibited a female specimen of *Gastrophysa raphani*, Fabr., bred from a parthenogenetic ovum by Dr. Osborne, of Letterkenny, Donegal.

Mr. T. Wood exhibited a specimen of *Notiophilus biguttatus*, Fabr., having two impressions on the right elytron and one on the left. It was captured at West Wickham last August.

Mr. R. Meldola, on behalf of Mr. W. J. Argent, who was present as a visitor, exhibited five varieties of Lepidoptera captured in Britain during the present season.

Mr. H. B. Pim exhibited a specimen of *Harpalus discoideus*, Fabr., captured at Gravesend on July 26th of this year.

Mr. E. A. Fitch exhibited males, females and workers of *Lasius mixtus*, Nyl., which had been taken this year, for the first time in Britain, by Mr. G. C. Bignell, at Bickleigh, Devon.

Mr. E. Saunders said that this species was now generally considered to be only a form of *L. unbratus*, Nyl., differing from typical specimens in having a narrower head and the pubescence more scattered.

Mr. A. S. Olliff exhibited an abnormal specimen of *Papilio americanus*, Koll. (*sadatus*, Lucas).

The Secretary read a letter, addressed to Mr. A. R. Wallace, from Mr. James Blyth, of Vanualevu, Fiji, to the effect that the cocoa-nut trees there were suffering more severely than usual this year from the ravages of an insect called by the natives "mimimata," and that the planters wish to introduce some bird that will clear the trees of the insects, and yet not destroy the early flower of the nut or pick the berries of the coffee plant, or the ears of the maize.

Mr. C. O. Waterhouse expressed the opinion that the *Phasmidæ* referred to were no doubt *Lopaphus cocophages*, Newp., and *Phibalosoma Apollonius*, Westw.; specimens of the latter were in the British Museum Collection from Vanualeru; also specimens of *Phibalosoma Pythonius*, Westw.—rather the larger species—from Ngau, Fiji.

Mr. E. A. Fitch said of course the *Phasmidæ* were protected species,

but the introduction of the Kingfisher (*Halcyon sancta*, Vig.) might prove useful, as Mr. E. L. Layard had related in 'The Field' (August 10, 1878), that this bird fed greedily on *Cicadida*, &c., in New Caledonia. *Lopaphus cocophages* was the species mentioned by Mr. Nightingale (Trans. Ent. Soc. Lond. i. p. lxiii; Proc. July 6th, 1835) as so very destructive to the cocoa-nut trees in the neighbouring Friendly Isles.

The Secretary read a communication received from the Colonial Office with reference to the report upon the insect which attacks the eggs of locusts; also an enclosure from Sir Robert Biddulph, High Commissioner of Cyprus, enquiring whether the insect itself might not be destructive to crops and vegetation; and further, an extract from a letter from Lieut.-Col. Sir C. Wilson, H.M. Consul-General in Anatolia, recommending certain mechanical steps to be taken with a view to the limitation of locust attacks, also suggesting the introduction of the Russet Starling, or Locust-bird, (*Pastor roseus*, Linn.).

Mr. D. Sharp communicated the descriptions of "Some new Coleoptera from the Hawaiian Islands."

Mr. C. O. Waterhouse read a paper "On some new South American Coleoptera of the family *Rutelidæ*," resulting from the examination of some *Rutelidæ* collected by Mr. Buckley in Ecuador; which were described, together with others already in the British Museum Collection.

Prof. J. O. Westwood communicated the "Description of the immature state of a Ceylonese insect (*Dyscritina longisetosa*) apparently belonging to an undescribed genus."

Mr. P. Cameron communicated some "Notes on Hymenoptera, with descriptions of new species."

November 2, 1881.—H. T. STAINTON, Esq., F.R.S., &c., President, in the chair.

Mr. C. O. Waterhouse exhibited a variety of *Urapteryx sambucaria*, L., captured at Wandsworth. Also a specimen of a recently characterized Hemipteron, *Aërophilus Bonnairii*, Sign., discovered in the British Museum Collection, labelled "Polperro, Cornwall," no doubt of British origin.

Mr. W. F. Kirby exhibited a new species of *Antheræa* (*A. macrophthalma*, Kirby), received from the Gold Coast.

Mr. Kirby also exhibited, on behalf of Mr. P. Cameron, numerous microscopic preparations of the saws, mouth parts, and other details of various *Hymenoptera*.

The Rev. A. E. Eaton exhibited pieces of honeycomb, constructed, by a community of hive-bees, in the open air, upon the outside of an exposed bare wall, quite unsheltered from the afternoon sun. At the end of last May, Mr. W. Herbert Evans, of Forde Abbey, Dorset, noticed a protuberance on the western wall of the principal wing of his residence placed just under

neath a string course in the masonry, about 40 ft. from the ground and 10 ft. below the battlements. He at first supposed it to be a curiously coloured swallow's nest, but on looking more carefully he perceived that it was the commencement of a honeycomb, in course of construction by the bees of an adjoining crevice. The comb eventually consisted of four slabs, hung parallel with the face of the wall, measuring each of them about 2 ft. by $2\frac{1}{2}$ ft. The larger part of the combs was blown down during the gale of October 14th, when many of the cells were found to be tenanted by bee-grubs; but the bases of the combs remained *in situ*, and on November 2nd were not deserted by the bees. The fragments exhibited were picked up from the ground under the nest on the 26th ult., after the bees had forsaken them and the grubs had departed.

The President remarked that he knew no other instance on record of the hive-bee building in the open air.

Mr. Eaton also exhibited specimens and coloured figures of new varieties of *Armadillium vulgare*, L., and *Porcellio scaber*, Latr., together with a typical example of the latter species from Iceland.

Dr. H. C. Lang exhibited a specimen of *Lycena Icarus*, Rott. (*Alexis*, W. V.), var. *Icarinus*, Scriba, in which the basal spots on the under side of the fore wings are absent. Dr. Lang thought it would be difficult to distinguish the female of this variety from *L. Medon*, Esp.

Mr. J. Jenner Weir remarked that he possessed specimens of this variety, but he believed it to be of very rare occurrence in Britain.

Mr. W. L. Distant exhibited a specimen of an undescribed species of *Cicada* from Borneo.

Mr. T. R. Billups exhibited a female specimen of *Dufourea vulgaris*, Schk., captured on a bloom of ragwort on the banks of the Basingstoke Canal at Woking, August 1st, 1881. This was the first female taken in Britain.

Sir Sidney S. Saunders said he captured a male near Chewton, Hampshire, in August, 1879. He believed this genus was rare on the Continent, as Lepeletier de St. Fargeau had never met with specimens himself, but described a male and female from Latreille's collection.

Sir Sidney S. Saunders exhibited a species of *Scleroderma* received from an entomologist of Lyons, and specimens of two dipterous insects, *Oscinis frontella*, Fall., and *Drosophila fenestrarum*, Fall.; the former reared from wild figs forwarded by Mr. Frank Calvert, of the Dardanelles; the latter from Egyptian sycamore figs. In both instances the parent flies appeared to have entered these figs after the *Cynipidæ* (reared therein on the seed-germs) had escaped through a large aperture which they make by gnawing around the crown until this falls in. The slender white worm-like larvæ of the *Oscinis* were wriggling about amid the pulp of the fig, together with many of the fragments of the former occupants, chiefly males which never quit the fig; and a large number of the *Oscinis* pupæ—some

of these obtained from their larvæ placed apart for identification—were found attached to the paper wherein the figs were enveloped, the flies emerging about three weeks later in September. These figs were sent with the object of possibly obtaining from that locality specimens of the *Cynips Psenes* of Linnæus, found by Hasselquist near Smyrna in the figs of the "*Ficus Caricæ orientalis*," as described in his 'Iter Palæstinum,' edited by Linnæus in 1757; and therein adverted to under the names of *C. Ficus* and *C. Caricæ*. The types of *C. Ficus* exist in the Linnean Cabinet at Burlington House, but no one appears to have met with it since that period.

Mr. M'Lachlan remarked that he had lately examined the Linnean Collection, in company with a German botanist interested in the fig insects, and had failed to find the types of *Cynips Psenes*.

In reply Sir Sidney Saunders stated that the specimens of *C. Ficus* in the Linnean Cabinet, although unlabelled, correspond with Hasselquist's description, in their rufous colouring.

Mr. H. T. Stainton exhibited some curious cases said to be constructed by lepidopterous larvæ found by Dr. George Hay, Port-Surgeon at Aden.

Mr. Stainton said it was remarked in the 'Proceedings' of this Society (p. xxii) that "no other insect [than *Dolerus palustris*, Klg.] was known to feed on *Equisetum*." He was requested by Mr. Buckler to refer to his description of a larva of *Hydracia micacea*, Esp., found feeding on the roots and stems of *Equisetum arvense* and later on *E. fluviatile* (cf. Ent. Mo. Mag., vi. 164).

Mr. Stainton exhibited a specimen of *Cerura vinula*, L., which had been bred by Mr. Piffard from a larva found in Hertfordshire, and which from the description (more especially of the larva) in Kirby's 'European Butterflies and Moths,' p. 136, had been referred by him to *C. erminea*, Esp.

Mr. A. G. Butler communicated the completion of his "Descriptions of new Genera and Species of Heterocerous Lepidoptera from Japan," treating of the Pyrales and Micros.

Prof. J. O. Westwood communicated a memoir entitled "Notæ Diptero-logicæ. No. 6.—On the minute species of dipterous insects, especially *Muscidæ*, which attack the different kinds of cereal crops"; giving a *resumé* of the descriptions and habits of the various species. Special reference was made to a species (*Oscinis avenæ*, Bjerk.) which this year had proved very destructive to housed oat grains, near Winchester.

Mr. Fitch remarked that Curtis's *Oscinis granarius* was most probably synonymous with this species, and the same which the Rev. O. P. Cambridge had found in great numbers in Dorsetshire in a loft where barley had been stored. Mr. Fitch also mentioned that on the heavy clay-land of Essex it was remarkable that wheat after a whole summer's fallow was almost invariably attacked by the young stem-feeding larvæ of *O. vastator*, Curt., locally known as "white maggot."—E. A. FITCH, *Hon. Sec.*

NOTICES OF NEW BOOKS.

Allgemeine Zoologie oder Grundgesetze des thierischen Baus und Lebens. H. ALEXANDER PAGENSTECHER. Berlin. I.—IV. 1878—1881.

THE appearance of the fourth part of Prof. Pagenstecher's very elaborate 'General Zoology' seems to be a suitable opportunity for directing the attention of our readers to the scope and object of this work, the fourth volume of which, larger somewhat than its predecessors, contains more than 950 pp., while the four parts together present us with as many as 847 figures. Professor Pagenstecher may justly be congratulated on his activity, and the German world of science on this valuable addition to their already noble monument of conscientious laboriousness. While saying this we are bound to add an expression of sympathy with the learned author. In the preface to the second part of his work he had to express a regret for the delay in its appearance, due to an attack of inflammation of the eyes, which for seven months precluded all work. Illness and other circumstances have prevented the publication of the fourth volume, the mere printing of which is stated to have taken as much as fifteen months; and we can well believe it.

Some general considerations immediately arise when we proceed to take a comprehensive survey of this work. Obviously enough, we have not here to deal with any elementary introduction to the science, and any criticisms on the score of its length may therefore be regarded as being fairly beside the question; though, on the other hand, one who was a student in one of our ancient Universities, and is a teacher in one of the great centres of population, might well question whether he finds more leisure as professor than he found as student. From such a point of view as this, Dr. Pagenstecher's work might meet with severe treatment. The second and third volumes contain more than 900 pages, or as much as the fourth itself; but with all this mass of printed matter, nowhere is there an index, nor any list of the figures in each part, while the table of contents for each may, not unfairly, be spoken of as meagre. Secondly, we have to find fault

with the complete absence of any kind of bibliography; the author is so careful to refer to his authorities by name that he makes this absence all the more felt; and, if he would have us compare him with the author of that great work which is still in some points unequalled,—with the veteran Von Siebold,—he stands, in this particular at any rate, on a level so much lower as to be beyond comparison. In a work now appearing in its fourth edition, with which we shall compare his in a moment,—the ‘Zoologie,’ namely, of Prof. Claus,—we find sufficient references to direct us to the monographs on which works such as these must always be based, and the want of which must be so much felt by the student of Pagenstecher that we hope the author will find it possible to issue some systematically arranged list of the papers which he has consulted.

As to the question of figures, the three notable German works on Zoology,—those of Siebold (or Siebold and Stannius), of Carus and Gerstaecker, and of Claus,—are all without illustrations; on the other hand, Owen and Huxley, in this country, have always presented a certain number of figures or diagrams, more or less satisfactory. There are, therefore, two points of view; the former has the advantage of forcing the student to consult the original monograph from which the parts are drawn; the latter has the advantage of being much more compendious. From Prof. Pagenstecher we never learn anything as to the existence of those monographs, which are the veriest treasures of the thorough student, and he is therefore bound to atone for this defect by being compendious. As to the figures themselves, one has to speak with some difficulty, for while some are passable and clear, others are badly printed and almost unintelligible; on the other hand, it is true that our old favourites are welcomely absent, and the monographs of which we have spoken have been largely and justifiably drawn upon.

On the whole, then, it would seem that a general treatise, like a simple manual, of Zoology can never be prepared without meeting with somewhat severe, though, we trust, not in this case carping or ungracious, criticism. Even yet another trouble remains,—due, however, to a cause which we can hardly lament,—“*Den während dieser Zeit im überreichen Flusse der zoologischen Literatur erschienenen werthvollen Arbeiten.*” The third volume of this work is completely devoted to the organs of respiration;

that volume bears date 1878, and so when we put it into the hands of a student we find ourselves presenting him with a book in which not a word is said, nor could have been said, of Prof. Huxley's ingenious classification of the gills of the Crustacea. Well may the writer of systematic anatomical works stand by the rapidly growing stream of zoological literature and cry with Horace's peasant, "Labitur et labetur in omne volubilis ævum."

But, were he to stand and wait for the stream to flow past, we should never be able to hail the appearance of a book like that in hand; one in which there is no speculation, and too little of the author himself, but one which has, at any rate, this considerable recommendation, that it exhibits throughout that principle which John Hunter has, for this country, made for ever classical, and which the College of Surgeons as their conservators have brought to a point of perfection which is the admiration of comparative anatomists; the method, that is, of dealing, from the lowest to the highest, with that set of organs which, for each, subserves the same function.

In a day when embryology and phylogeny have given a somewhat different aspect to morphology, it is well, if only for the purposes of rivalry, that a teacher should still be found who insists without reservation on the importance of complete comparison.

Cameos from the Silver-land; or, the Experiences of a Young Naturalist in the Argentine Republic. By ERNEST WILLIAM WHITE, F.Z.S. Vol. I. London: Van Voorst. 1881.

THIS volume of 412 pages contains a certain amount of information, conveyed in the "tallest" language. It is difficult to conceive why these sketches should have been termed "Cameos," nor does the writer give any clue to his reasons for such a title. The work appears to be intended as a kind of handbook to the Argentine Republic, which, according to the accompanying map, includes the whole of the Pampas, Patagonia, and even Tierra del Fuego and the outlying islands as far as the western exit of the Straits of Magellan (!)—an overlapping of the territory of Chili which will scarcely be acknowledged by that Republic. The various provinces comprised in these vast claims, which extend

from Cape Horn to Bolivia and Brazil, are described in rhapsodical style. The author talks familiarly of the Patagonian Indians, whom he terms "huge Macropods," whilst the Pampeans are "Longobardi Centaurs," whatever that may mean; and he sprinkles his pages with sketch-lists of the principal plants and animals, each with a Latin name, thus making a brave show of scientific knowledge. So far, however, as this volume goes, Mr. White's experiences seem to have been confined to the familiar route by steamer and rail from Buenos Ayres to Córdoba; thence by rail and diligence to Mendoza; with a few excursions in those neighbourhoods. To make amends for his own want of experience, he appears to have jotted down everything that he was told, and being somewhat deficient in critical faculty, he gives us a good many so-called "facts," which render the book highly amusing; it is indeed a long time since we have so thoroughly enjoyed a work on South America. Many passages might be cited in illustration of this, but as we are noticing the work on its Natural History merits, we will endeavour to confine ourselves to that topic.

The following extract will convey some much-needed information, and will at the same time give a favourable impression of the author's style:—

"The Museum of Buenos Aires is doubtless rich, perhaps richer than any other, in palæologic edentate osteology: those huge monsters which once lazily trod its (*sic*) surface, are brought from their oozy tombs by the wand of science, to astonish mankind by their massiveness and uncouth forms, to attest zoologic degeneracy and themselves to witness how the mighty have fallen in the puny pigmy forms which now surround us. Fancy with what contempt must the huge *Glyptodon clavipes* look down upon his tiny modern representatives the *Dasypus peba* or the still smaller *Chlamydophorus truncatus*; the gigantic Megatherium, twenty feet long, and with bones more massive than an elephant, or his ancient brother the Mylodon somewhat less ponderous, with what a derisive smile must they not view the efforts of their feeble modern vicar (!) the *Bradypus tridactylus*: and so on of the rest."

Worthy of the foregoing is the description of the presiding genius of this Museum:—

"The stranger would hardly expect to find buried here amongst his ponderous tomes, one of Europe's savans: yet so it is, the curator Dr. Hermann Burmeister, whose twenty years' residence in the Argentine

Republic has not dimmed but enhanced the lustre of his fame, is a philosopher who has already celebrated his golden wedding to science: spare and tall, eagle-eyed, fibrous, his whole frame bristling with intellectual energy; such is the courteous but independent autocrat, whose figure stands out amongst the literati of South America, as did Saul's amongst the Israelites."

But we must tear ourselves away from Buenos Ayres, where the President daily converses with his ministers by telephone; "and the time seems looming when man will hardly need bodily presence and activity, but the subtlety of ethereal intercourse banishing corporeality he will begin his immortality on this side of the grave;" a very consoling reflection for South American Presidents, who, like Irish landlords, were evolved to be shot at, and sometimes hit. And, glancing at the cemetery where "the loved head which ought to have been tenderly laid in the family vault at home, lies here expatriated till the last trump unites all stragglers"—a sentence suggestive of dynamitic operations; we follow our author to the railway which takes him to Campaña, on the river Paraná, where the "Dipterous plagues are unusually large and bloodthirsty," and one species of "the Culicides, a very numerous family in this neotropical region," emits a delicious flowery fragrance when crushed. Ascending the river to Rosario, the railway is again taken to Córdoba, and we are informed that "on a late occasion a countrywoman of ours, an authoress of repute, visiting the Republic for the first time, and crossing these Pampas, actually preferred to ride on the cow-catcher in the midst of a pitiless Pampero, her dress and locks streaming in the wind, whilst the worthy engineer of the line, a victim to gallantry, was obliged to share her company on that dangerous and exposed seat." Who can this celebrity be?

From Córdoba Mr. White made the excursion to Cosquín, the narrative of which has already been published in this journal (Zool. 1878, pp. 155-60) under the title of "Condor-hunting in the Sierras," in which a great deal of lead was wasted, and one Condor was secured—with a lazo. The nests were not then visited, apparently from fear of the birds, for "woe betide the daring plunderer, if the old birds should return during the burglarious attempt;" but we are now told that "the nest usually is composed of a few sticks merely, and contains two eggs, each about four inches long;" whereas in the first account

it is stated that "the universal testimony is that the Condor lays but one egg." Condors on this side of the Andes seem to have several peculiarities not noticed elsewhere: their fierceness—or the dread of it—is greater, and they appear to be more amenable to swan-shot than to a bullet, "as the skin is so closely covered with hard glossy plumage that the latter is more liable to glance off"! The same will probably hold good of buck-shot. Further on we are told that the Condors "select a calf four or five months old and wait till the mother is at some distance, then suddenly swooping down and striking the animal to the ground, to *rip out its tongue* either as a 'bonne bouche' or to *prevent the utterance of any signal of alarm*"!—the italics are ours. Has Mr. White ever seen this? We trow not: our experience is that the Condor invariably begins operations *at the other end* of the victim.

From the pleasant city of Mendoza, at the foot of the Andes, Mr. White made an excursion to hunt Huanacos, and so far as the hunting was concerned he succeeded abmirably, but he bagged no game. At an elevation of 8300 feet he observed two specimens of the Mountain Biscacha, *Lagidium Cuvieri*, the occurrence of which we do not remember to have seen previously recorded from this side of the Andes. The most interesting expedition was, however, the one to the neighbourhood of La Paz (a settlement about forty leagues from Mendoza, and not to be confounded with the Bolivian city of the same name), the "Médanos," or sand-hills of which, are the stronghold of the curious *Chlamydophorus truncatus*, known in Argentine Spanish as the "Pichi-ciego," an obvious corruption of "Bicho-ciego," or blind animal, a "beautiful little plantigrade aberrant member of the Armadillo family." Full notes on a single specimen obtained after six days' search by a large number of men, will be found in the 'Proceedings of the Zoological Society,' 1880, pp. 8-11.

Here we must take leave of the first volume. A second is promised, and as we see by the last 'Ibis' that Mr. P. L. Selater has described two new species of birds obtained by Mr. White on recent visits to Oran, in the province of Jujuy (not Salta), near the Bolivian frontier, and to Catamarca, it is possible that the next instalment may be more instructive to the naturalist, even if somewhat less amusing to the ordinary reader.
